

In each of the embodiments of the present invention, it is preferred that the stiffening plate(s) and ceramic plate or tile or plates or tiles is/are machined to be, in combination, within 0.005 inches of the corresponding dimensions of the sub-chambers or cells 5 within which they are placed. In accordance with the teachings of the present invention, it is preferred that the metal material used to encapsulate the ceramic material consists of a material having relatively low density, high strength and good ductility along with a coefficient of thermal expansion higher than the coefficient of 10 expansion for the ceramic material encapsulated therewithin. Applicants have found that an alloy of Titanium known as Ti-6Al-4V or Ti-6Al-4V ELI (Extra Low Interstitials) is a suitable material for this purpose. Ti-6Al-4V has a relatively low density (4.5 g/cc), relatively high strength (900 MPa), and good ductility 15 (yield strength of 830 MPa at 0.2% yield), and can be bought already annealed according to Mil T 9046 spec. The thermal expansion of Ti-6Al-4V is about  $10.5 \times 10^{-6}$  in/in °C from 0-600 °C, a coefficient considerably higher than that of dense SiC which has a thermal expansion coefficient of  $4.1 \times 10^{-6}$  in/in °C from 0-600 20 °C, a difference in which the thermal expansion coefficient for the Titanium alloy is over 2½ times the thermal expansion coefficient for the ceramic material.

In the preferred embodiment of the present invention, the ceramic material employed may consist of pressure 25 assisted (PAD) SiC-N, one of a family